

**Translation****PCT****INTERNATIONAL PRELIMINARY EXAMINATION REPORT**

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference 0000054024	<b>FOR FURTHER ACTION</b> See Notification of Transmittal of International Preliminary Examination Report (Form PCT/IPEA/416)	
International application No. PCT/EP2003/011931	International filing date ( <i>day/month/year</i> ) 28 October 2003 (28.10.2003)	Priority date ( <i>day/month/year</i> ) 30 October 2002 (30.10.2002)
International Patent Classification (IPC) or national classification and IPC C08G 69/02		
Applicant BASF AKTIENGESELLSCHAFT		

1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.
2. This REPORT consists of a total of 5 sheets, including this cover sheet.
- ☒ This report is also accompanied by ANNEXES, i.e., sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).

These annexes consist of a total of 1 sheets.

3. This report contains indications relating to the following items:

- I ☒ Basis of the report
- II ☐ Priority
- III ☐ Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- IV ☐ Lack of unity of invention
- V ☒ Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- VI ☐ Certain documents cited
- VII ☐ Certain defects in the international application
- VIII ☐ Certain observations on the international application

Date of submission of the demand 30 April 2004 (30.04.2004)	Date of completion of this report 06 October 2004 (06.10.2004)
Name and mailing address of the IPEA/EP	Authorized officer
Facsimile No.	Telephone No.

## INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No.

PCT/EP2003/011931

## I. Basis of the report

## 1. With regard to the elements of the international application:\*

- ☐ the international application as originally filed
- ☒ the description:  
pages 1-11, as originally filed  
pages \_\_\_\_\_, filed with the demand  
pages \_\_\_\_\_, filed with the letter of \_\_\_\_\_
- ☒ the claims:  
pages \_\_\_\_\_, as originally filed  
pages \_\_\_\_\_, as amended (together with any statement under Article 19  
pages \_\_\_\_\_, filed with the demand  
pages 1-7, filed with the letter of 12 August 2004 (12.08.2004)
- ☐ the drawings:  
pages \_\_\_\_\_, as originally filed  
pages \_\_\_\_\_, filed with the demand  
pages \_\_\_\_\_, filed with the letter of \_\_\_\_\_
- ☐ the sequence listing part of the description:  
pages \_\_\_\_\_, as originally filed  
pages \_\_\_\_\_, filed with the demand  
pages \_\_\_\_\_, filed with the letter of \_\_\_\_\_

2. With regard to the language, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.  
These elements were available or furnished to this Authority in the following language \_\_\_\_\_ which is:
- ☐ the language of a translation furnished for the purposes of international search (under Rule 23.1(b)).
- ☐ the language of publication of the international application (under Rule 48.3(b)).
- ☐ the language of the translation furnished for the purposes of international preliminary examination (under Rule 55.2 and/or 55.3).

## 3. With regard to any nucleotide and/or amino acid sequence disclosed in the international application, the international preliminary examination was carried out on the basis of the sequence listing:

- ☐ contained in the international application in written form.
- ☐ filed together with the international application in computer readable form.
- ☐ furnished subsequently to this Authority in written form.
- ☐ furnished subsequently to this Authority in computer readable form.
- ☐ The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.
- ☐ The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.

4. ☐ The amendments have resulted in the cancellation of:

- ☐ the description, pages \_\_\_\_\_
- ☐ the claims, Nos. \_\_\_\_\_
- ☐ the drawings, sheets/fig \_\_\_\_\_

5. ☐ This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).\*\*

\* Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report since they do not contain amendments (Rule 70.16 and 70.17).

\*\* Any replacement sheet containing such amendments must be referred to under item 1 and annexed to this report.

**V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement****1. Statement**

Novelty (N)	Claims	1-7	YES
	Claims		NO
Inventive step (IS)	Claims	1-7	YES
	Claims		NO
Industrial applicability (IA)	Claims	1-7	YES
	Claims		NO

**2. Citations and explanations**

Reference is made to the following documents:

D1: US-A-2 264 293 (MARTIN BRUBAKER MERLIN), 2 December 1941

D2: PATENT ABSTRACTS OF JAPAN, Vol. 018, No. 251 (C-1199), 13 May 1994 & JP 06 033002 A (KANSAI PAINT CO LTD), 8 February 1994

D3: US-A-6 034 204 (GOSSELINK EUGENE PAUL ET AL), 7 March 2000

The amendments submitted with the letter of 11 August are deemed admissible (PCT Article 34(2)(b)).

D1 describes the polymerisation of hexamethylene diammonium adipate (examples I and II) and  $\epsilon$ -caprolactam (example III) in the presence of ethanolamine (examples, page 1, second column, line 52 to page 2, second column, line 20, and claim 1).

D2 discloses a composition containing, *inter alia*, a polyamide produced from (i) a polyamine, (ii) a polycarboxylic acid and (iii) a carboxylic acid having a phenolic OH group.

D3 discloses condensation products from (a) an amino acid,

(b) a copolymerisable compound which can be, *inter alia*, a monohydroxycarboxylic acid, and (c) a further compound, e.g. a lactam (claim 1). In a preferred use, (a) lysine, (b) a compound selected from a group containing, *inter alia*, citric acid and (c)  $\epsilon$ -caprolactam, laurolactam, aminocaproic acid or aminolauric acid are condensed together (claim 8).

The subject matter of claim 1 differs from D1, D2 or D3, which, independently of one another, can be considered the closest prior art, in that the compound at the end of the polymer chain that is chemically bonded via an amide group and has at least one hydroxyl group is a linear unbranched alkane monocarboxylic acid having at least one terminal hydroxyl group.

Claim 1 is therefore novel over D1 (PCT Article 33(2)).

The applicant shows in comparative examples that the polyamides as per the invention have a higher melt-volume flow rate for the same relative viscosity than polyamides that end with propionic acid. The problem solved by the present invention thus consisted in providing polyamides with a higher melt-volume flow rate but the same relative viscosity.

Although D1 is concerned with the viscosity of polyamide compositions, it does not mention the melt-volume flow rate. Nor does any other of the cited documents consider this point. Consequently, it would not be obvious for a person skilled in the art to react polyamides with linear, unbranched alkane monocarboxylic acids having hydroxyl groups so as to solve the above-mentioned problem.

The subject matter of claim 1 therefore involves an

inventive step (PCT Article 33(3)).

Claims 2-4 are dependent on claim 1. Claims 5 and 6 relate to a method for producing the polyamides as per claims 1-3. Claim 7 treats articles containing polyamides as per claims 1-4. Claims 2-7 therefore likewise meet the PCT requirements as to novelty and inventive step.

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